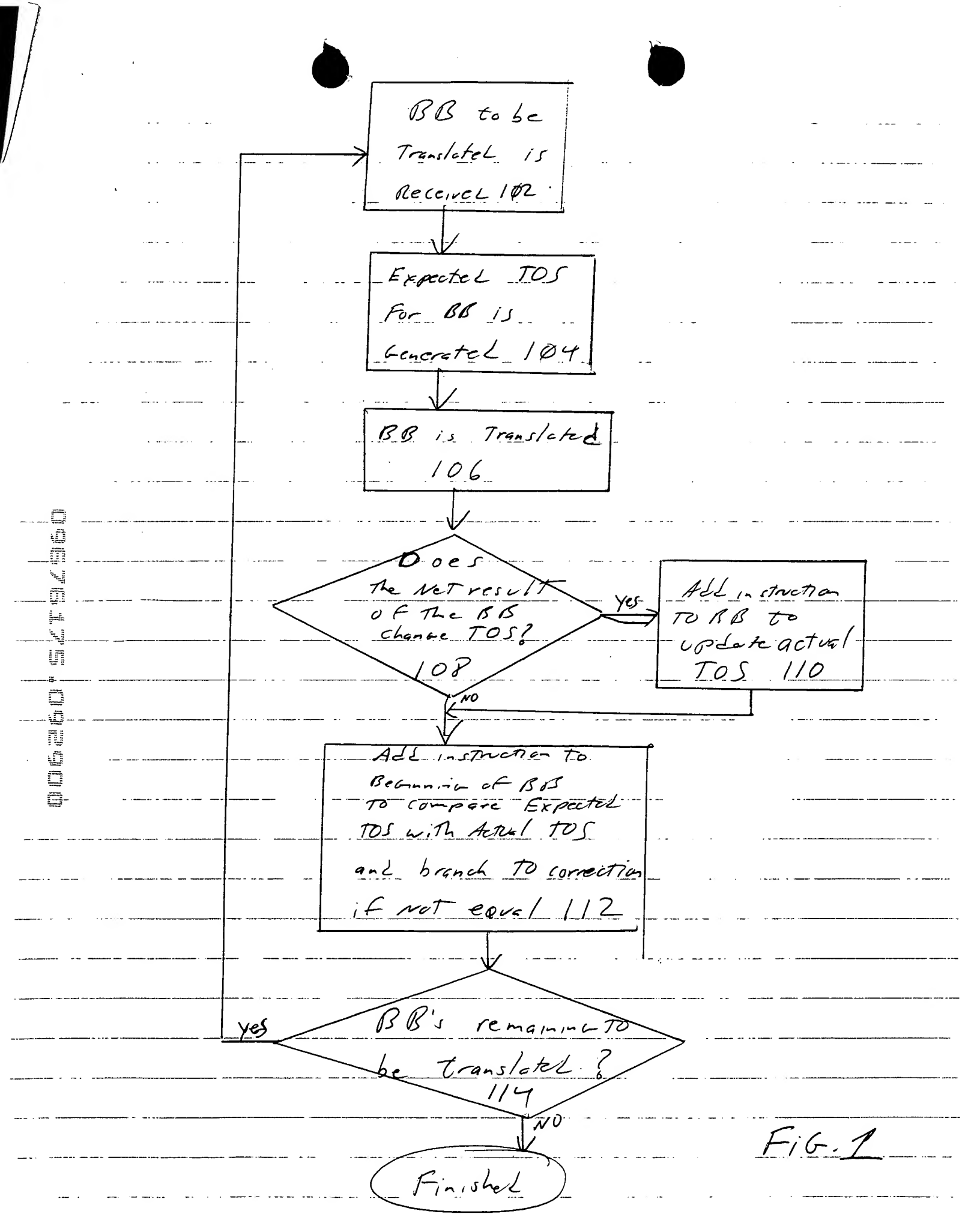
BB to be Translated is Received 102
Expected TOS For BB is Generated 104
BB is Translated 106
Does the Net result of the BB change TOS? 108
yes
Add instruction to BB to update actual TOS 110
NO
Add instruction to Beginning of BB to compare Expected TOS with Actual TOS and branch TO correction if not equal 112
BB's remaining TO be translated? 114
yes
NO
Finished

FIG. 1

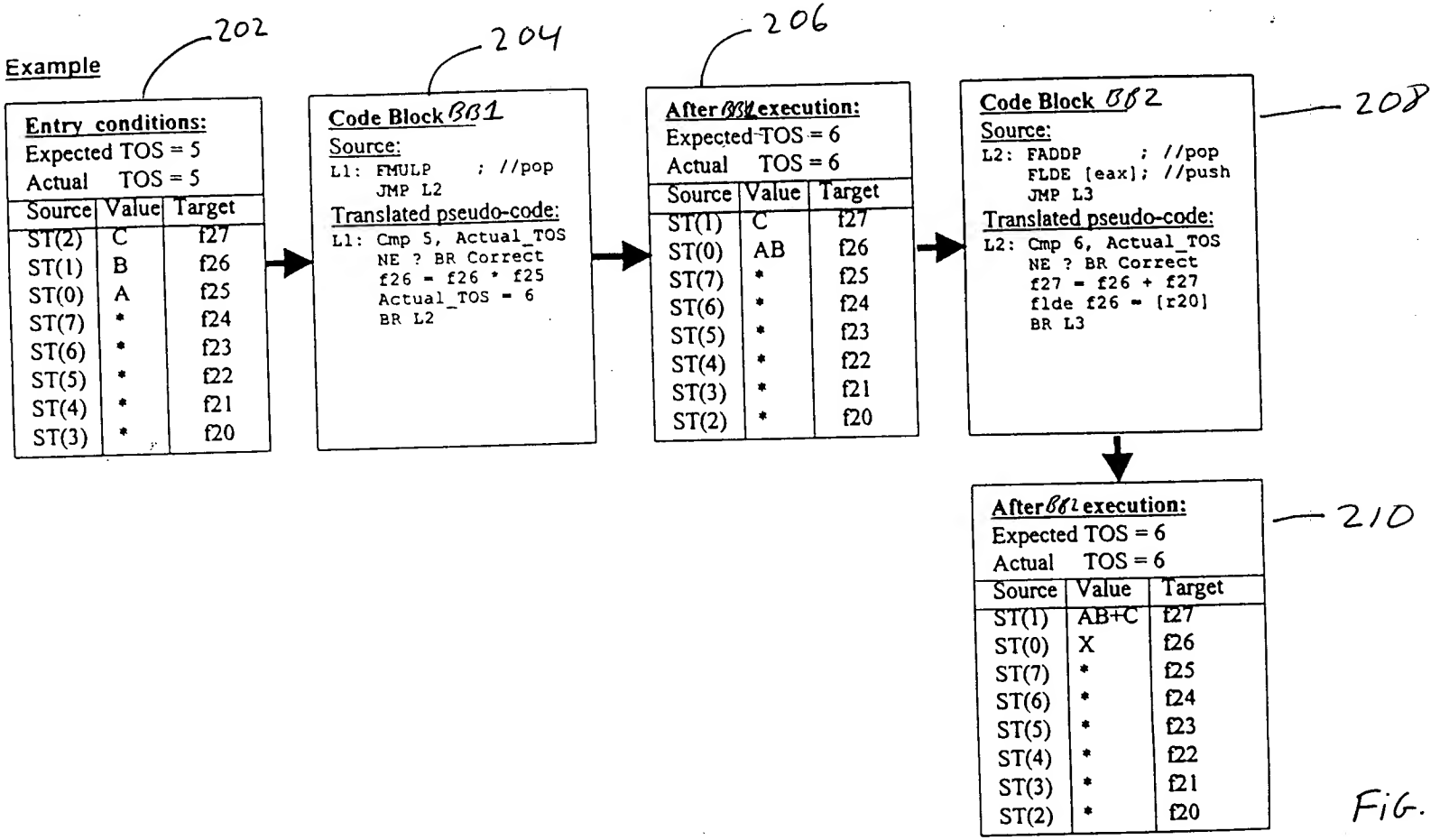
Example
202
Entry conditions:
Expected TOS = 5
Actual TOS = 5
Source | Value | Target
ST(2) | C | f27
ST(1) | B | f26
ST(0) | A | f25
ST(7) | * | f24
ST(6) | * | f23
ST(5) | * | f22
ST(4) | * | f21
ST(3) | * | f20
204
Code Block BB1
Source:
L1: FMULP ; //pop
JMP L2
Translated pseudo-code:
L1: Cmp 5, Actual_TOS
NE ? BR Correct
f26 = f26 * f25
Actual_TOS = 6
BR L2
206
After BB1 execution:
Expected TOS = 6
Actual TOS = 6
Source | Value | Target
ST(1) | C | f27
ST(0) | AB | f26
ST(7) | * | f25
ST(6) | * | f24
ST(5) | * | f23
ST(4) | * | f22
ST(3) | * | f21
ST(2) | * | f20
208
Code Block BB2
Source:
L2: FADDP ; //pop
FLDE [eax]; //push
JMP L3
Translated pseudo-code:
L2: Cmp 6, Actual_TOS
NE ? BR Correct
f27 = f26 + f27
flde f26 = [r20]
BR L3
210
After BB2 execution:
Expected TOS = 6
Actual TOS = 6
Source | Value | Target
ST(1) | AB+C | f27
ST(0) | X | f26
ST(7) | * | f25
ST(6) | * | f24
ST(5) | * | f23
ST(4) | * | f22
ST(3) | * | f21
ST(2) | * | f20

Fig. 2

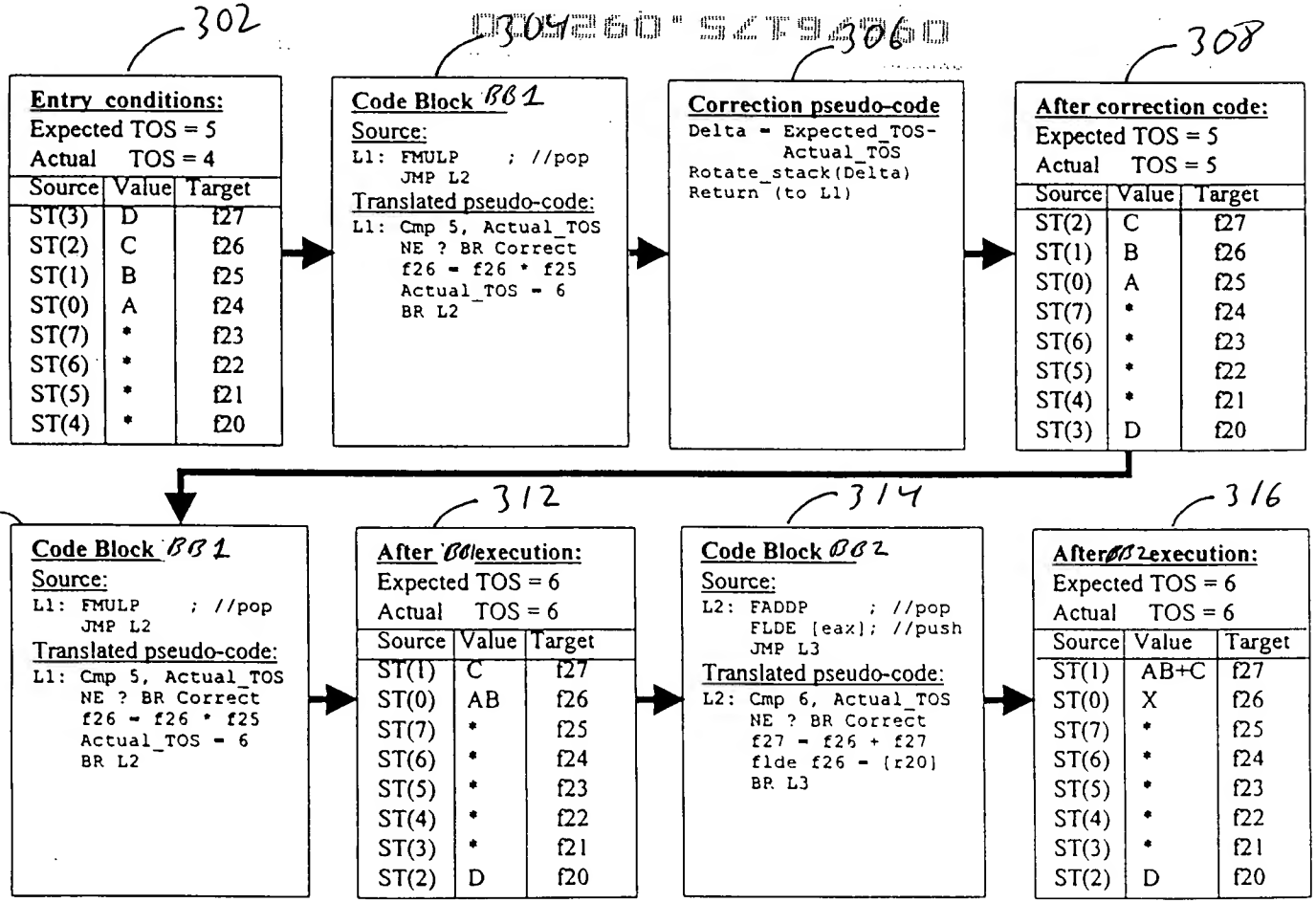
302
304
306
308
Entry conditions:
Expected TOS = 5
Actual TOS = 4
Source | Value | Target
ST(3) | D | f27
ST(2) | C | f26
ST(1) | B | f25
ST(0) | A | f24
ST(7) | * | f23
ST(6) | * | f22
ST(5) | * | f21
ST(4) | * | f20
Code Block BB1
Source:
L1: FMULP ; //pop
JMP L2
Translated pseudo-code:
L1: Cmp 5, Actual_TOS
NE ? BR Correct
f26 = f26 * f25
Actual_TOS = 6
BR L2
Correction pseudo-code
Delta = Expected_TOS-
Actual_TOS
Rotate_stack(Delta)
Return (to L1)
After correction code:
Expected TOS = 5
Actual TOS = 5
Source | Value | Target
ST(2) | C | f27
ST(1) | B | f26
ST(0) | A | f25
ST(7) | * | f24
ST(6) | * | f23
ST(5) | * | f22
ST(4) | * | f21
ST(3) | D | f20
310
312
314
316
Code Block BB1
Source:
L1: FMULP ; //pop
JMP L2
Translated pseudo-code:
L1: Cmp 5, Actual_TOS
NE ? BR Correct
f26 = f26 * f25
Actual_TOS = 6
BR L2
After BB1 execution:
Expected TOS = 6
Actual TOS = 6
Source | Value | Target
ST(1) | C | f27
ST(0) | AB | f26
ST(7) | * | f25
ST(6) | * | f24
ST(5) | * | f23
ST(4) | * | f22
ST(3) | * | f21
ST(2) | D | f20
Code Block BB2
Source:
L2: FADDP ; //pop
FLDE [eax]; //push
JMP L3
Translated pseudo-code:
L2: Cmp 6, Actual_TOS
NE ? BR Correct
f27 = f26 + f27
flde f26 = [r20]
BR L3
After BB2 execution:
Expected TOS = 6
Actual TOS = 6
Source | Value | Target
ST(1) | AB+C | f27
ST(0) | X | f26
ST(7) | * | f25
ST(6) | * | f24
ST(5) | * | f23
ST(4) | * | f22
ST(3) | * | f21
ST(2) | D | f20

Fig. 3

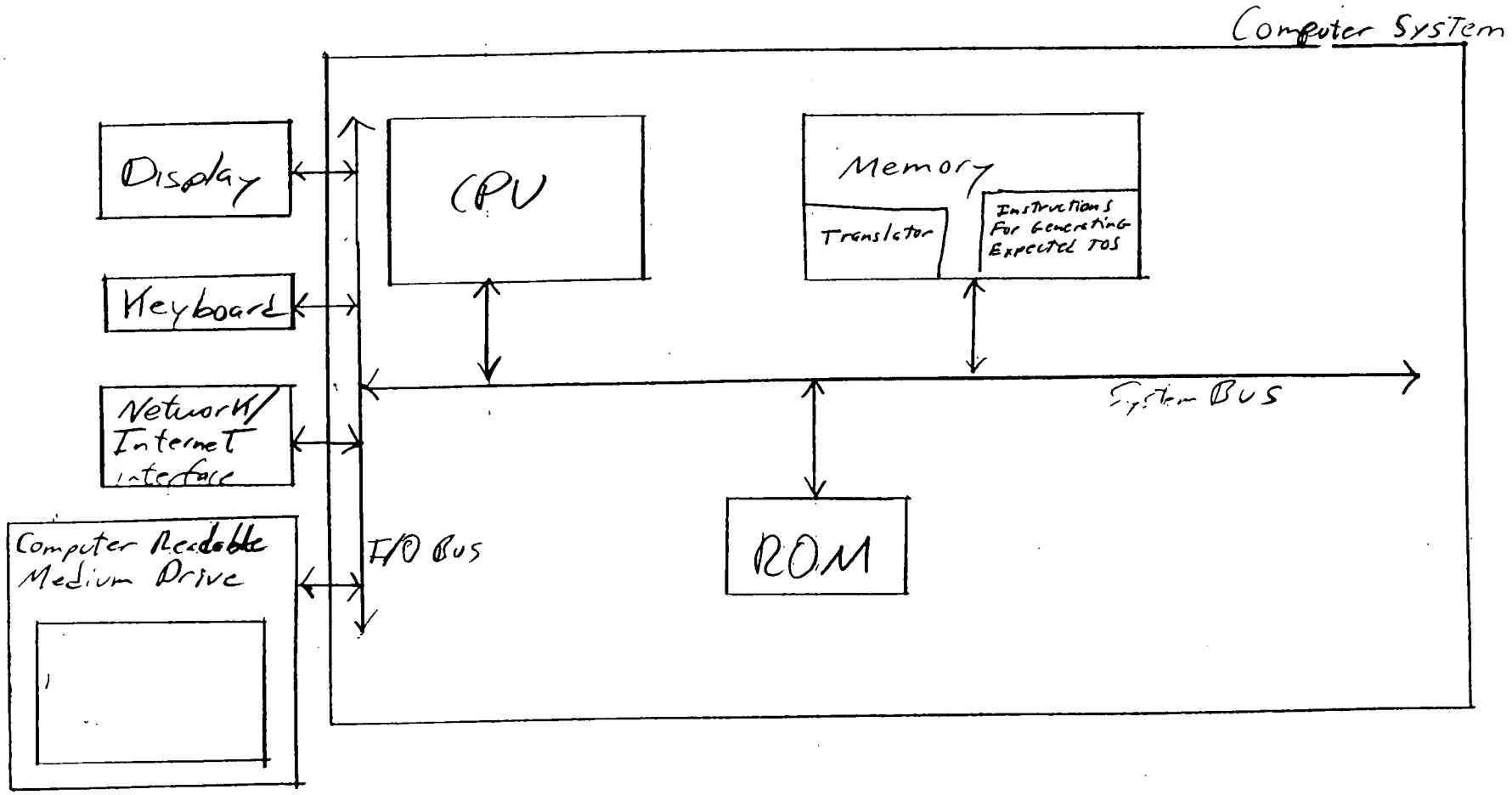
Computer System
Display
Keyboard
Network/ Internet interface
Computer Readable Medium Drive
CPU
Memory
Translator
Instructions For Generating Expected TOS
System Bus
I/O Bus
ROM

Fig. 4